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US 4425001 A **US 2963313 A**
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(58) Field of Search:
INT CL **B60P, B62D**
Other: **WPI, EPODOC**

(54) Abstract Title: **HORSE BOX TRAILER OR OTHER TRAILER**

(57) A horse box trailer 1 or other trailer including a wheeled chassis 2 or frame and having a plurality of spaced apart upwardly extending/structural support posts 6, 7, 8 connected thereto as structural support members with two said support posts at the rear and two said support posts at the front or towards the front of the chassis or frame. The support posts are provided with a mounting means on which is mounted an integrally formed roof member 34 or a support frame (47, figure 11) for receiving an integrally formed roof structure. The support post are connected to the roof member by means of sockets provided on the support post, roof member or support frame and corresponding projections provided in a cooperating manner on the support post, roof member or support frame, respectively, with the sockets receiving the projections. The roof member may be formed in two parts wherein such are connected by a lap joint. The roof may be formed from sheet moulding compound (SMC) or, alternatively, the roof may be formed from glass reinforced plastics (GRP).

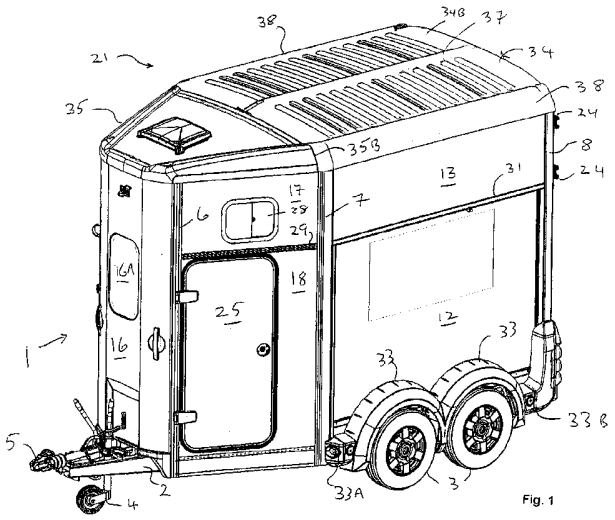

Fig. 1

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The claims were filed later than the filing date but within the period prescribed by Rule 22(1) of the Patents Rules 2007.

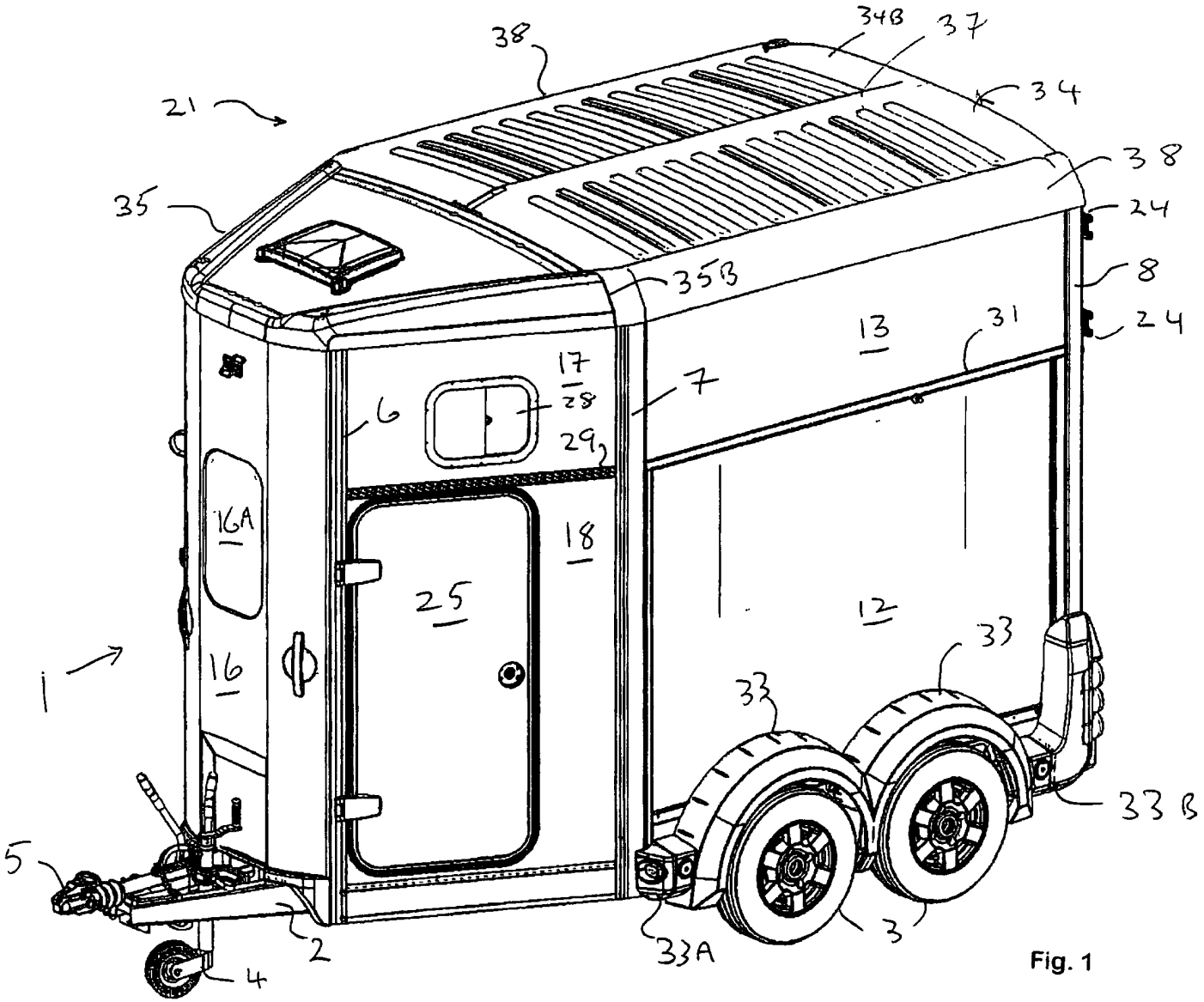
38
34B
37
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Fig. 1

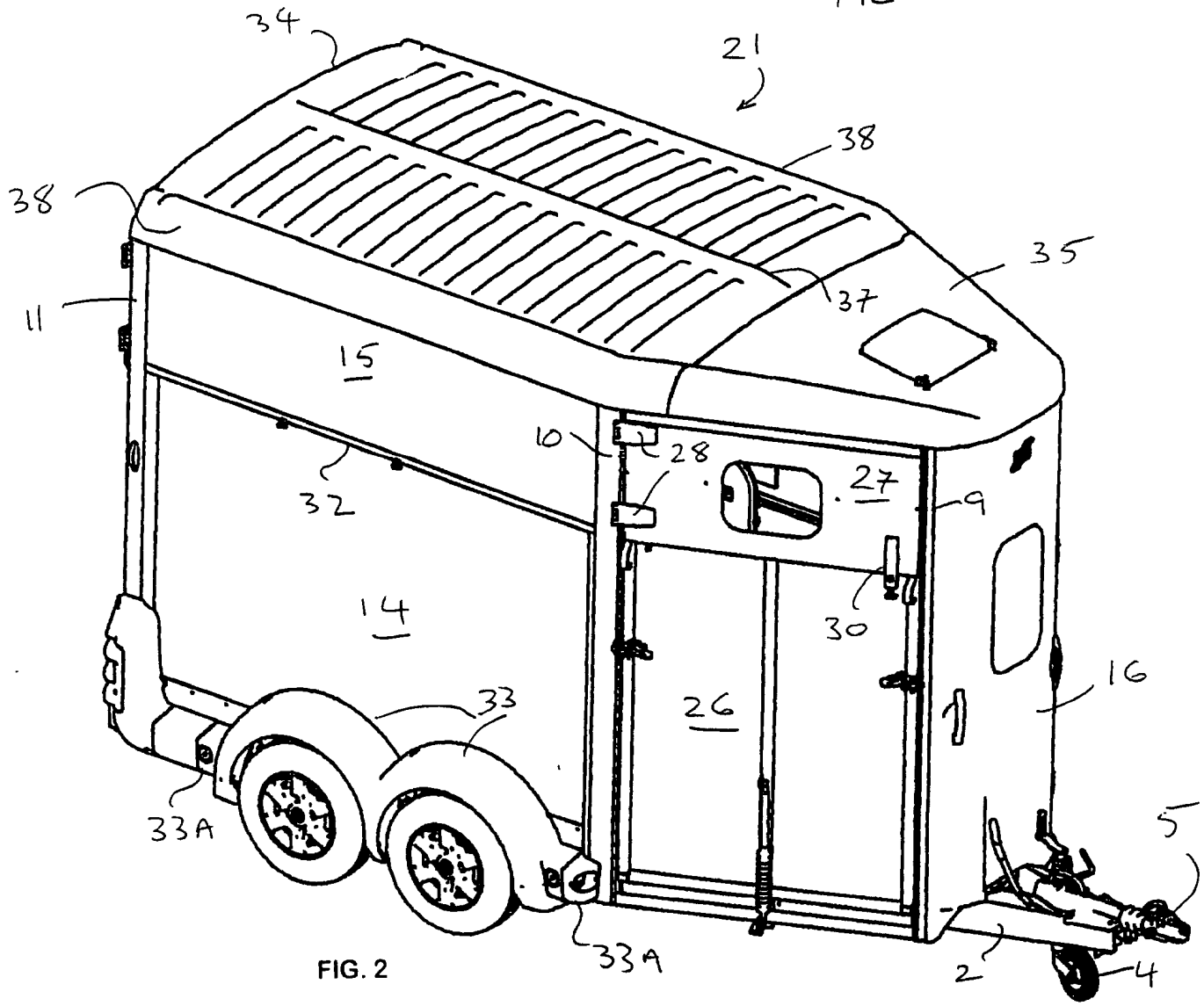

FIG. 2

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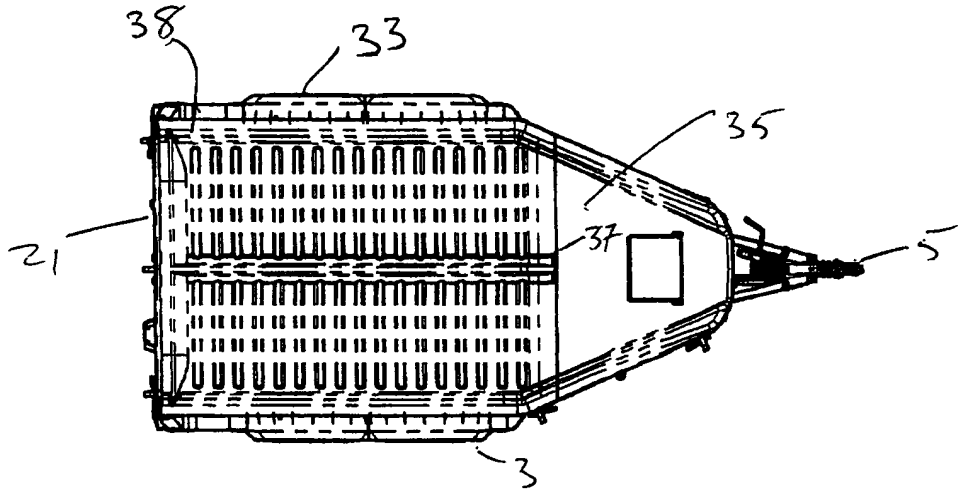

FIG. 6

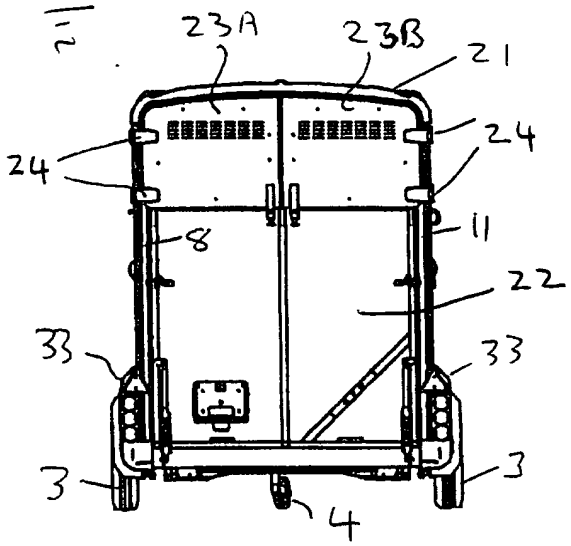

FIG. 4

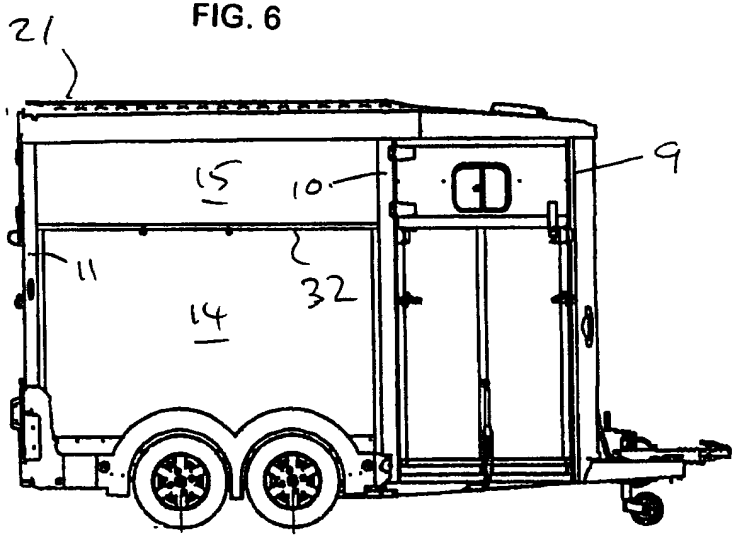

FIG. 3

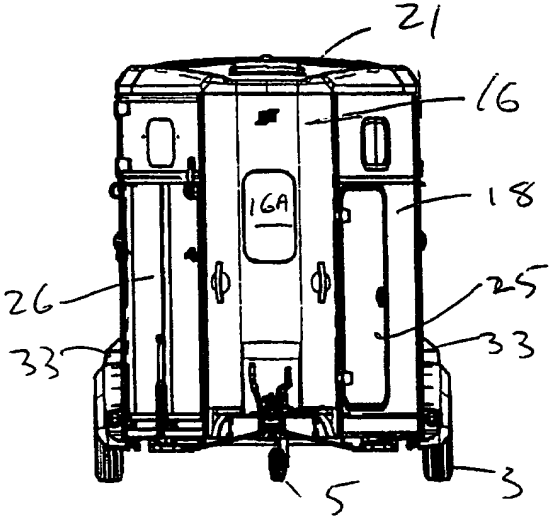

FIG. 5

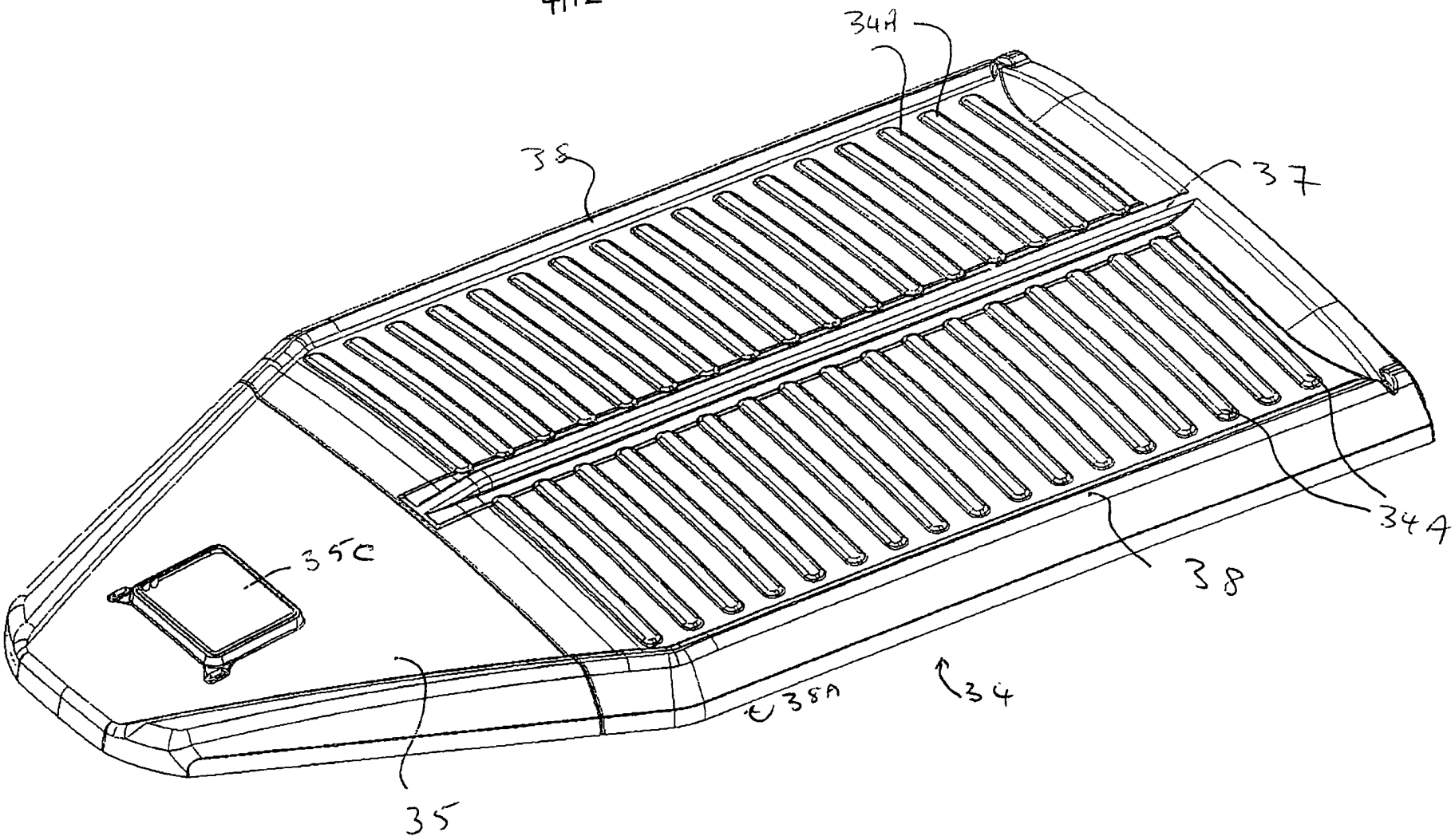

FIG. 7

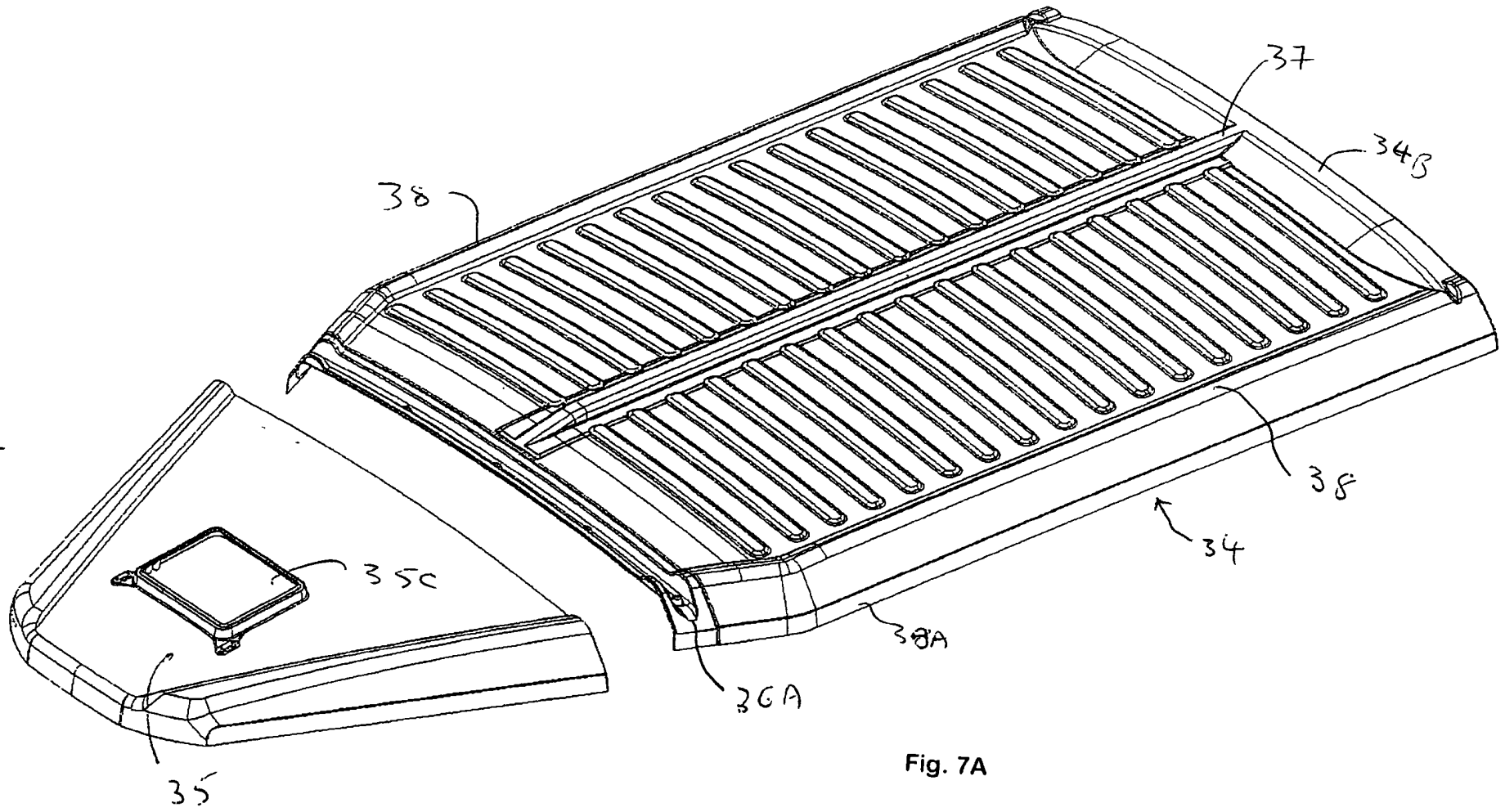

Fig. 7A

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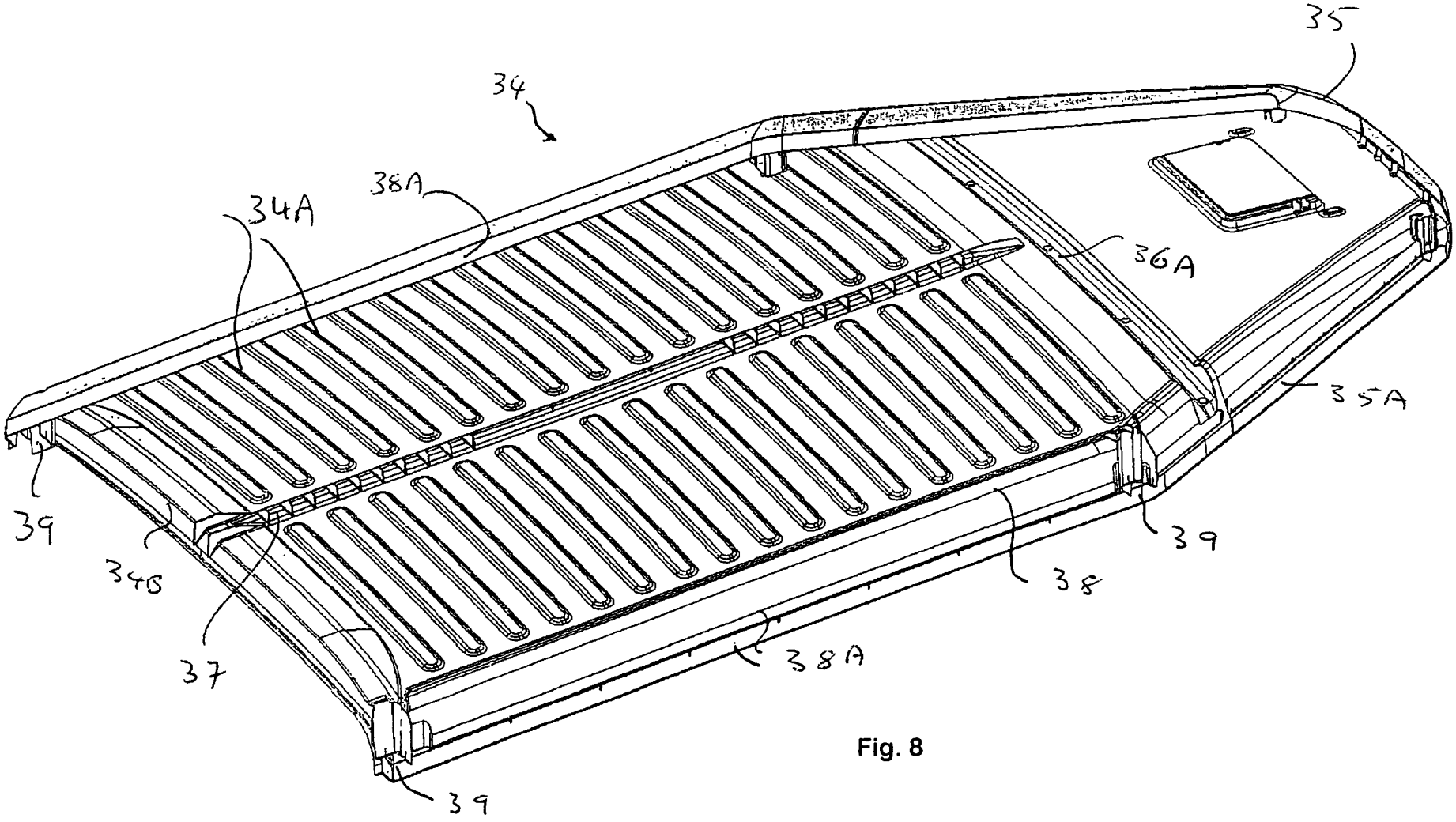

Fig. 8

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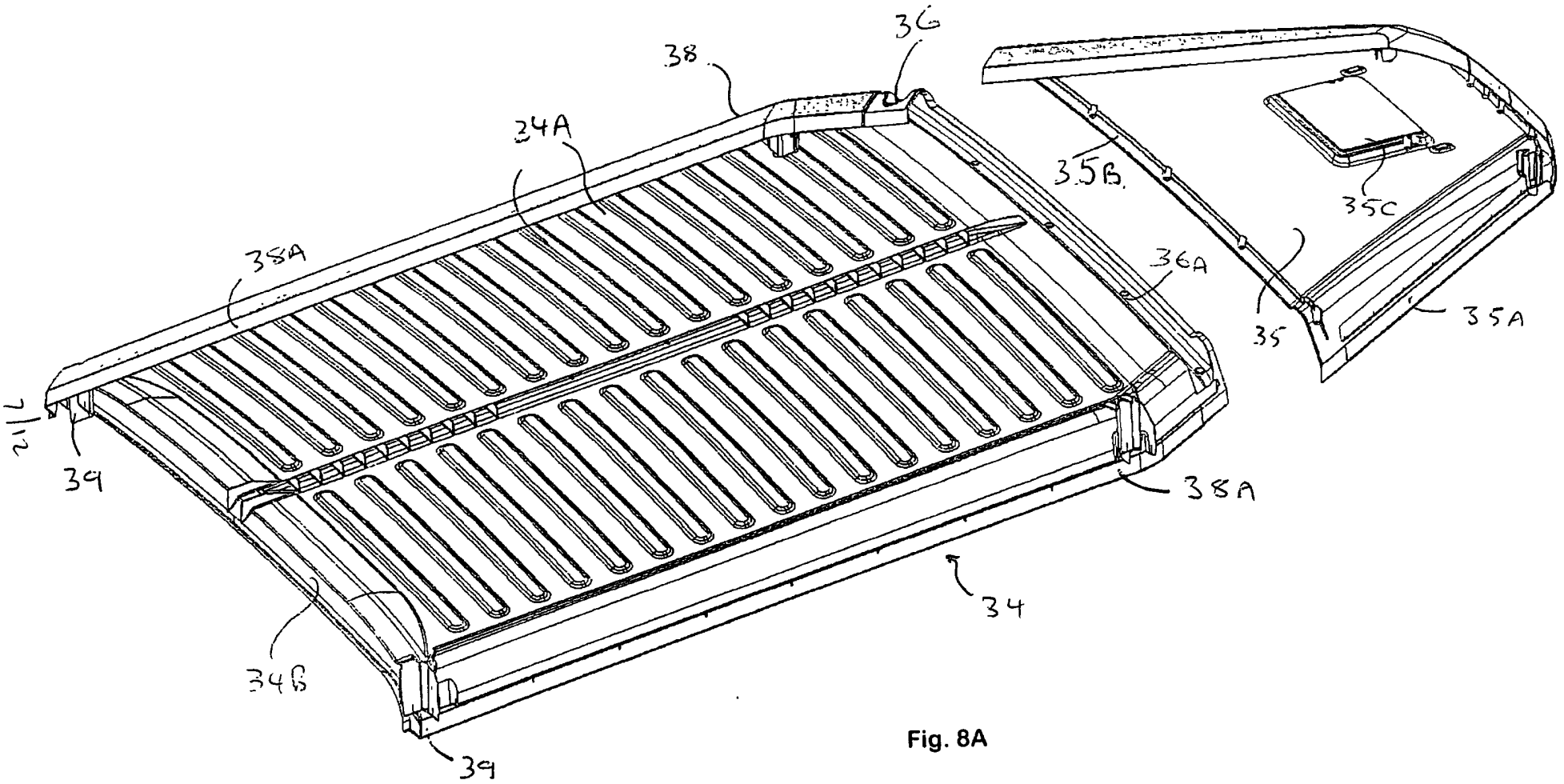

Fig. 8A

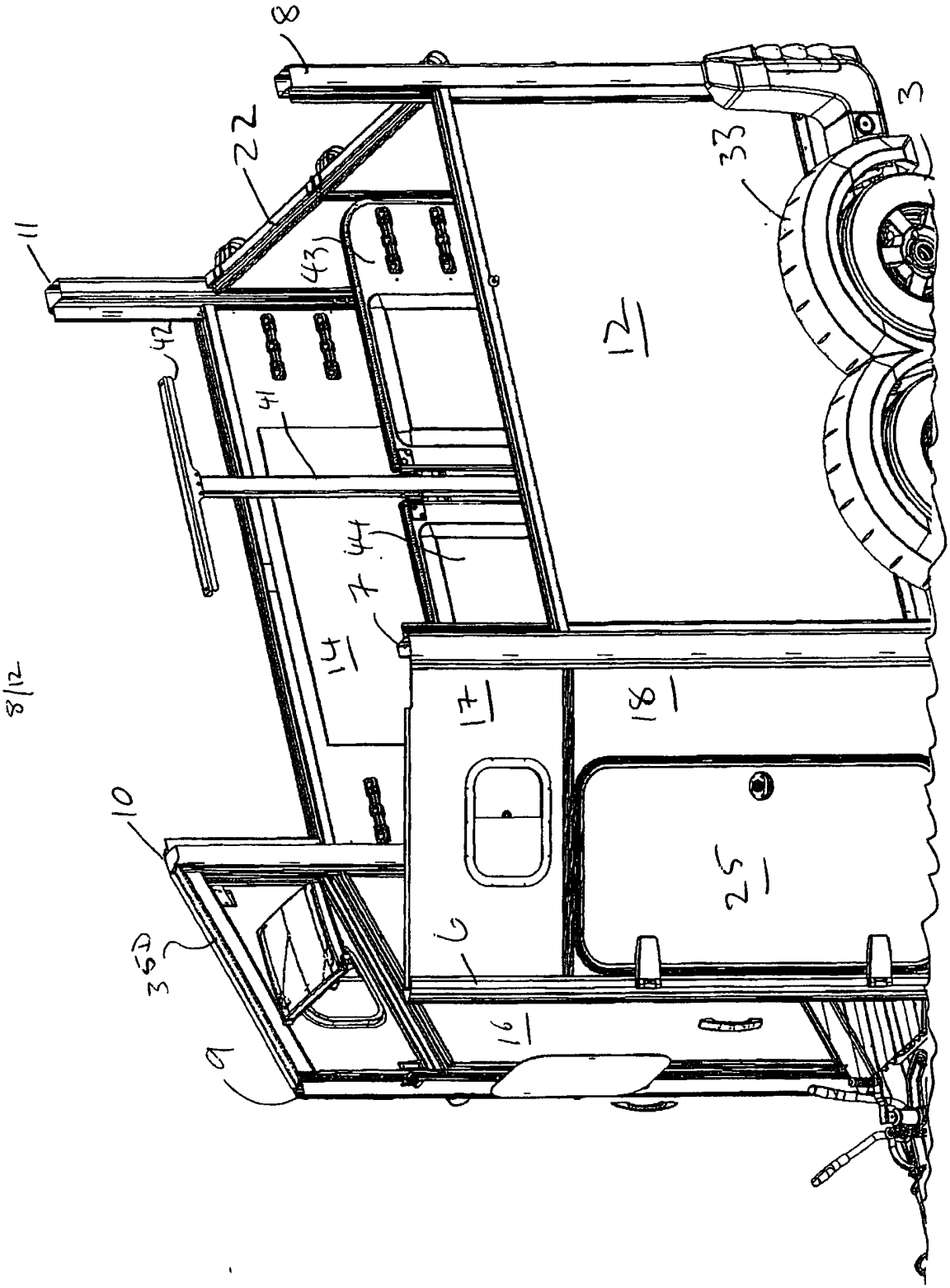

FIG. 9

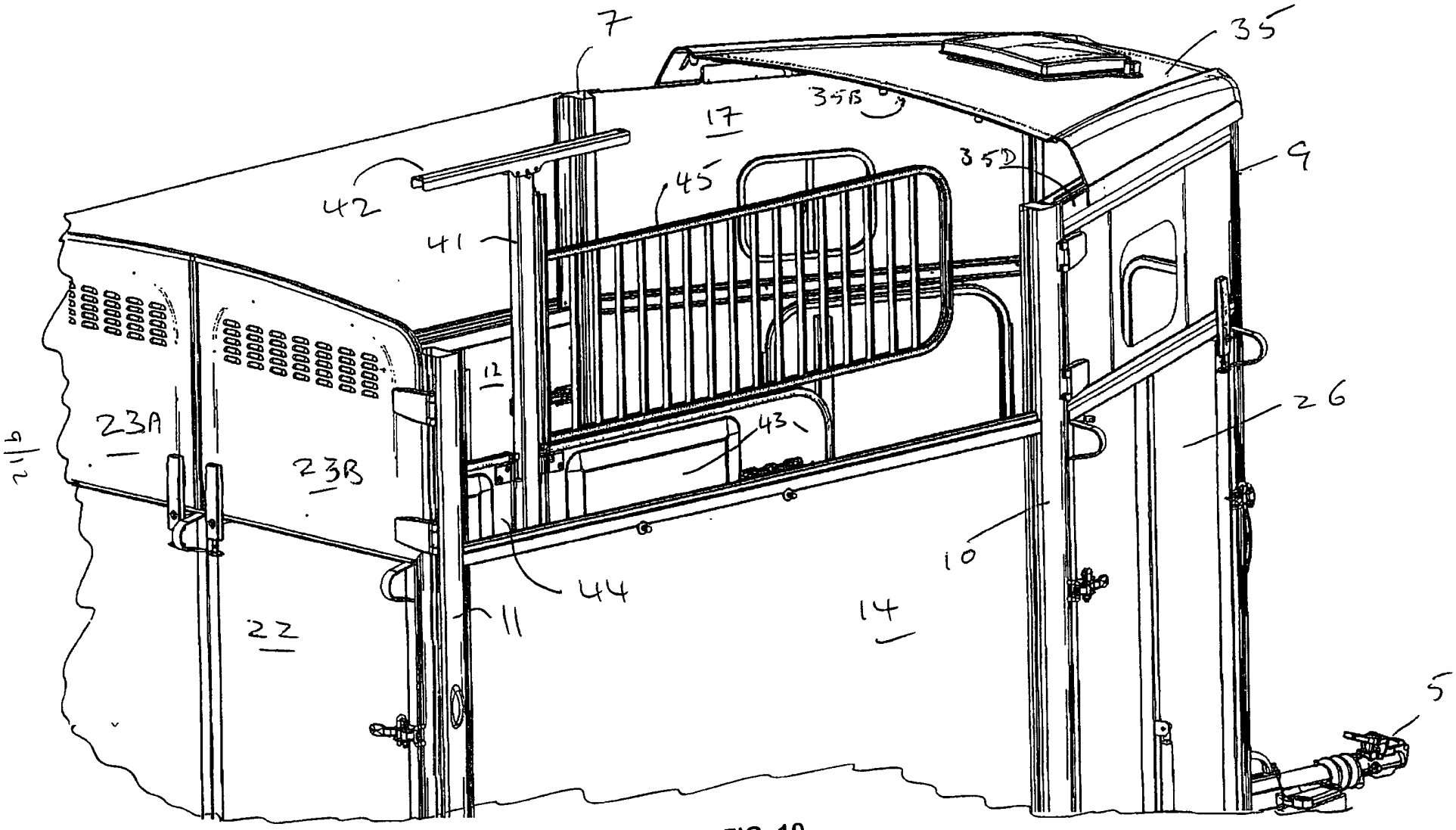

FIG. 10

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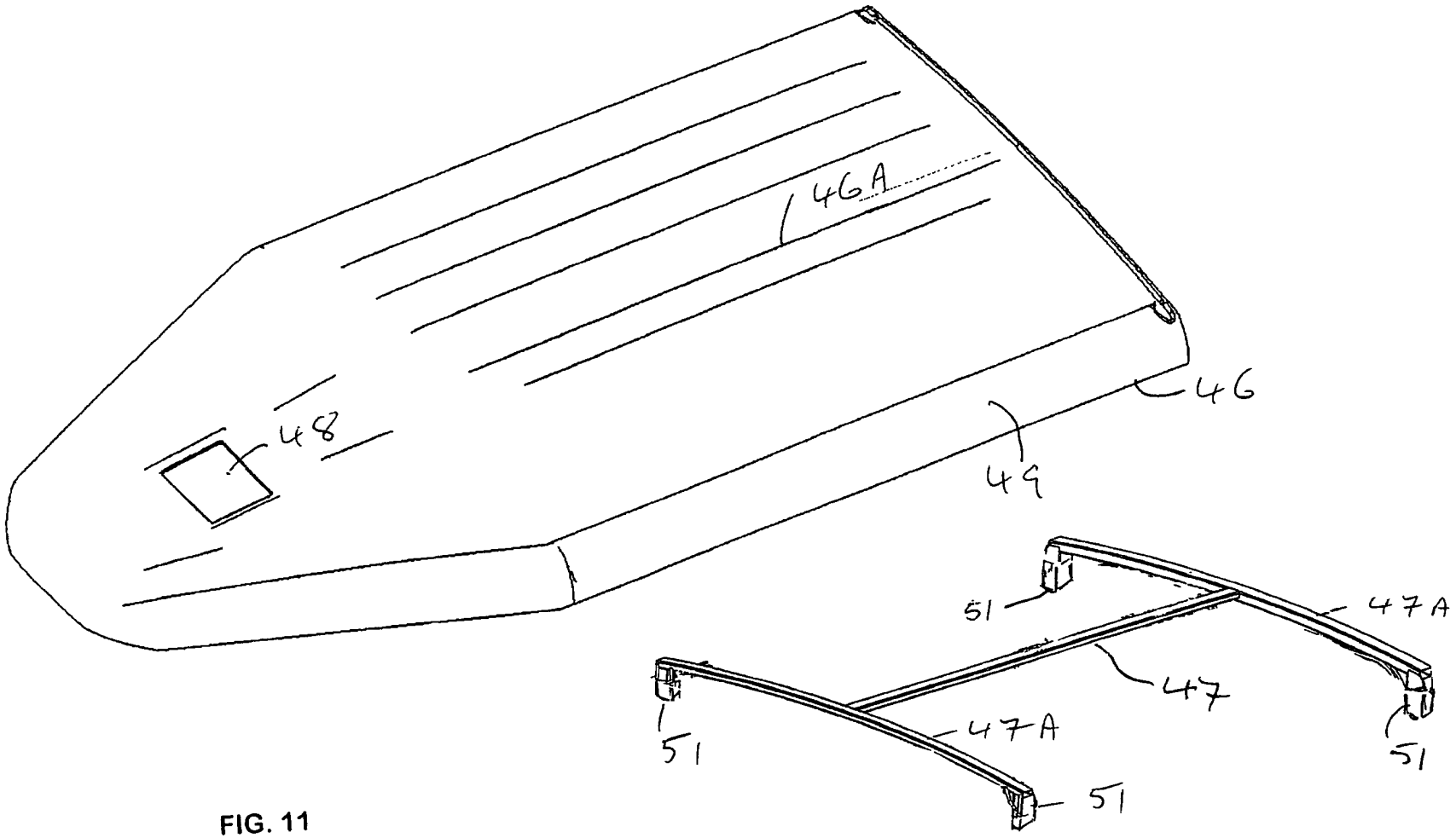

FIG. 11

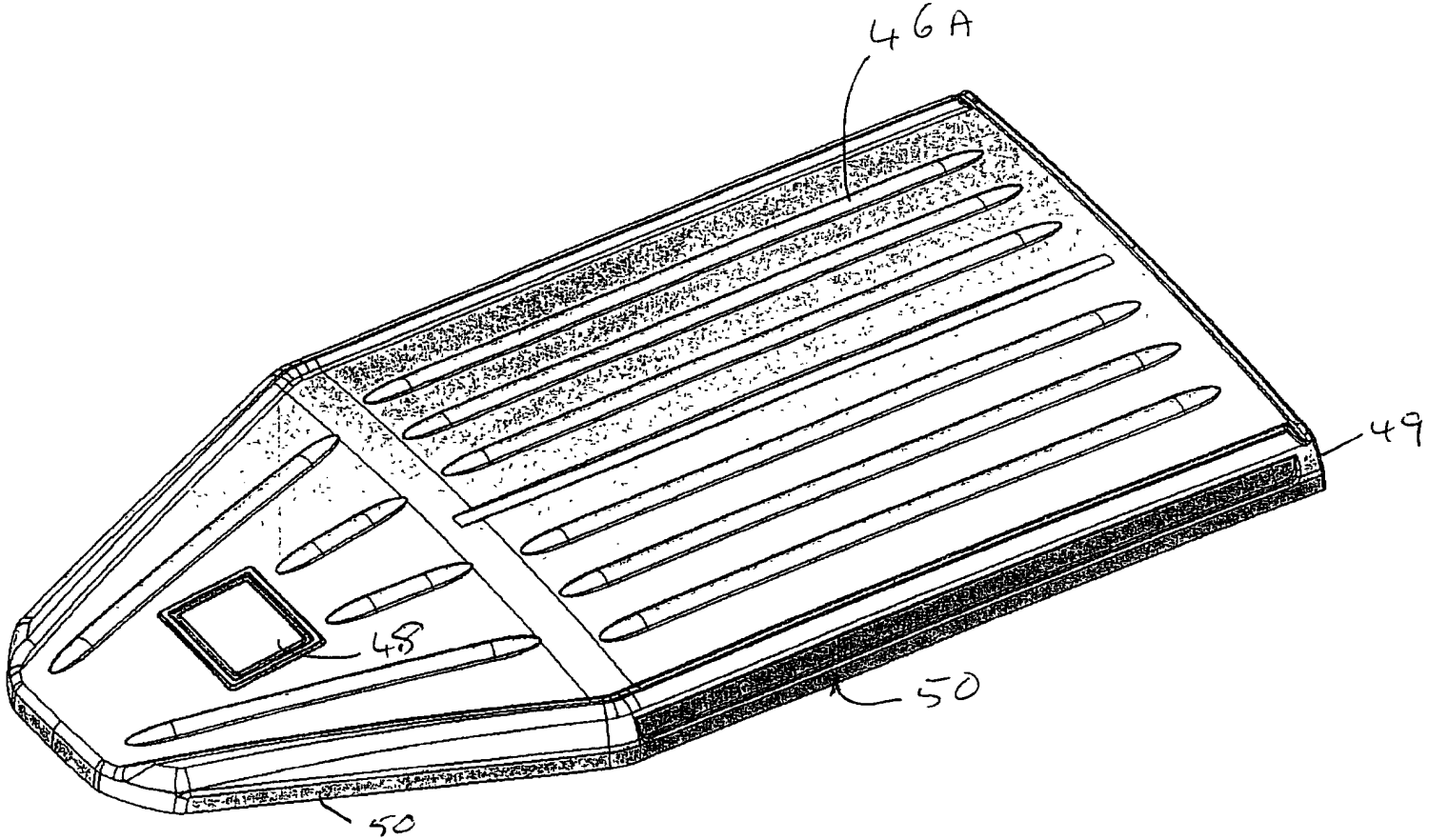

FIG. 12

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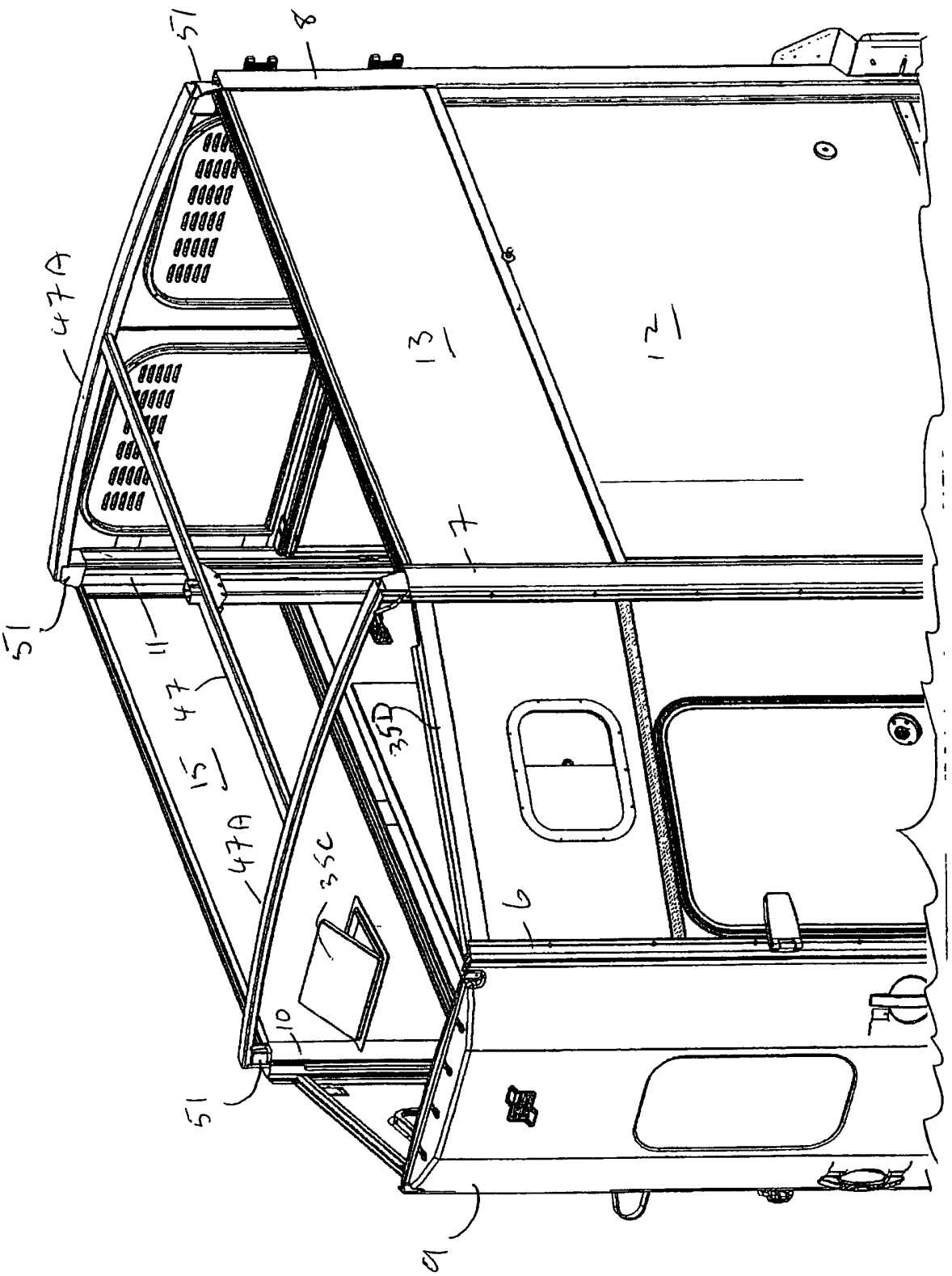

FIG. 13

IMPROVED HORSE BOX TRAILER OR OTHER TRAILER

The present invention relates to an improved horse box trailer or other trailer and particularly to one having an integrally moulded or formed roof member or part thereof.

It is known for horse box trailers and the trailers and particularly livestock trailers to be formed from a wheeled chassis having a floor connected thereto and inverted substantially U-shaped bands or frame members of open section connected thereto and spaced apart along the length of the trailer and having aluminium panels riveted to the bands to form the side walls and roof with curved shoulder portions such as illustrated in UK Patents GB 2287010.

It is also known to form in one piece the roof and side walls of a horse box trailer of glass reinforced plastic (GRP), which is a time-consuming operation and expensive. Also, because of the required moulding technique and the need for the moulded roof and side walls to be removable from the mould, the opposite side walls have to converge towards the roof which additionally causes considerable difficulties in hinge-mounting of the rear door of the horse box trailer and also as a consequence reduces the interior space at the mounting. The integrally moulded GRP roof and side walls of such boxes are mounted on lower supporting side walls by means of a butt joint or lap joint.

In our known horse box trailers, a major portion of the upper parts of the opposite side walls and roof are formed by a single sheet of aluminium with rounded corners / shoulders in the transition between each vertical side wall and the horizontal roof portion, and secured to inverted U-shaped bands.

Difficulty is sometimes experienced in sealing draughts between roof and rear walls and to prevent the ingress of water and also between panels especially as expansion of contraction through ambient temperature changes causes stresses and bending. Also known constructions are labour intensive and expensive.

According to a broad aspect of the present invention there is provided an improved horse box trailer or other trailer including a plurality of spaced apart, upwardly extending support posts, with said support posts having mounted at the top thereof via mounting means, an integrally formed or moulded roof member or a support frame connected to such a moulded roof member; said mounting means each comprising, respectively, a socket portion or part of the roof member or of the support post, and an insertion portion or projecting portion of the support post or of the roof member, with said insertion portion or projecting portion being insertable into said socket portion or part.

Preferably the sockets and projections will be shaped and sized so as to be close and securely fitting although preferably a space may exist for a securing bonding agents or adhesive to be provided between.

Also according to the present invention there is provided an improved towable horse box trailer or other trailer including a wheeled chassis or frame and having at least four spaced apart upwardly extending / structural support posts connected thereto as structural support members with two said support posts at the rear and two said support posts at the front or towards the front of the chassis or frame, and with said four support posts extending upwardly and having mounted at the top thereof an integrally formed or moulded roof member or a support frame for and connected to such a moulded roof member, said support posts preferably being of a hollow closed box section, and such support posts being connected to the roof member by means of at least four sockets on the roof member or on the top of the support posts and

at least four projecting portions at the upper ends of the posts or on the roof member, respectively, with the sockets receiving the projections. Preferably the projections are the upper ends of the posts or comprise such and the sockets are on the roof member or support therefore and are each for receiving the upper end of one of the support posts and being secured thereto.

The roof member may be integrally formed over its whole length from front to rear and side to side - especially when formed of glass reinforced plastics (GRP) material although may be formed in two parts preferably connected by a lap joint.

The roof member will preferably have a peripheral downwardly extending skirt or connecting wall extending along at least the opposite lateral sides and preferably with a channel or recess accessible from below, for connection to or interfitting with or on or over the top of the side walls of the horse box trailer. The side walls will preferably extend to or substantially to the roof level.

The roof or member will preferably be formed of a plastics material preferably of known Sheet Moulding Compound (SMC) which is subject to known compression moulding wherein a special sheet moulding compound which is a fibre reinforced composite material is located in a shaped form and heated under pressure until the material is cured and to form the desired shape (in contrast to GRP formation where there is a material built-up manually in layers). Because of the current restrictions in the size of the press machine used in SMC compression mouldings, it is required that the roof be formed in two parts with the main rear part being of SMC and the front (and often tapering part) being also of SMC. However, it would be possible although more expensive to make a part of the roof of GRP and would reduce the quality. A suitable joint between the two roof members may be formed in

known manner such as by a lap joint with adhesive bonding which even if such fails, water will not ingress because of the constructional shape.

Preferably the lateral downwardly extending portions of the integrally formed roof members have a recess, channel or double-walled portion accessible from below and which is locatable over the top edges of the side walls or support rails and preferably securable by mastic or other bonding means or provided with sealing means. The side channels will be provided on both the main and front roof members or portions.

Preferably at least the rear member part of the roof will have lateral and longitudinally extending side ribs or shoulder portions and a central longitudinal rib provided for strength or reinforcing. Preferably a plurality of transverse parallel ribs are also provided in the regions between the lateral ribs or shoulders and the central rib.

Where the roof member is formed of GRP, the support sockets will preferably be provided by a support frame, preferably galvanised of steel, of very generally I-shape in plan view with the free end of the cross-piece carrying sockets or recesses open on the lower sides. In other words, the frame comprises an elongate central portion having transverse end cross-pieces extending across the opposite ends. At the ends of the crosspiece there are downwardly extending socket or recessed parts for location over the ends of the upright support posts. Alternatively, projecting portions may be provided on the frame and extend into the ends of the posts. Similarly where an SMC member is involved, projections in place of sockets may be used extending downwardly and engaging in the tops of the support posts. The support frame member is located on the underside of the GRP or otherwise moulded roof member, preferably within the confines of a downwardly extending peripheral skirt or rim and is secured the roof member, preferably by adhesive or other bonding means. At least four sockets or projections are provided.

Where the steel "I" frame is attached to the support posts it preferably fixed mechanically by rivets or threaded fasteners. The GRP roof is preferably bonded to the top surface of the I-frame.

Preferably six upwardly extending support posts will be provided with the foremost front pair being spaced apart on opposite sides of the chassis frame which is normally tapered towards the towing hitch and the front posts support the narrower front roof member or portion of the horse box trailer. Preferably the support posts on either sides which define the space for forward access will be equally spaced to enable mounting of the ramp and access door on the offside or nearside and vice versa.

Preferably mudguards will be provided but connectable to the horse box trailer or other trailer and each will be formed in three parts with a front light portion and a rear light portion connectable to a main central mudguard part which is symmetrical and thus locatable on the near side or reversible to be locatable on the offside of the trailer, with the front and rear light portions being connectable to each in both positions. Thus the connecting means of the central mudguard part with preferably the innermost.

Also with a horse box trailer, the chassis member normally tapers or reduces in width towards the front, and preferably has side members and is symmetrical and has connection means on angled frame members such as to enable the front access door and front loading/un loading ramp to be locatable on the rear-side or on the off-side.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:-

Fig. 1 is an enlarged perspective view from the front and above of a horse box trailer having an integrally formed rear main roof portion of SMC and a front forwardly tapering roof portion also of SMC connected therewith and with six upwardly extending structural support posts or members and showing the front access door;

Fig. 2 is a perspective plan view of the trailer of Fig. 1 from the front and opposite side and showing the raised, front unloading ramp located on the off side in this instance;

Fig. 3 is a side elevation of the trailer of Fig. 2;

Fig. 4 is a rear elevation of a horse box trailer of Fig. 1 showing the rear ramp;

Fig. 5 is a front elevation of the horse box of Fig. 1;

Fig. 6 is a plan view from above of the horse box trailer of Fig. 1;

Fig. 7 is a perspective view from above of an integrally formed roof member of SMC and front roof part also of SMC abutting by way of a lap joint;

Fig. 7A is a similar member of Fig. 7 with the roof member and part separated;

Fig. 8 is a perspective view from below of the integrally formed roof member and front posts of Fig. 7;

Fig. 8A is a perspective view from below of the components of Fig. 8;

Fig. 9 is a fragmentary perspective view of the horse box of Fig. 1 wherein the roof member and upper side walls of the main compartment have been removed so as to show the six structural support posts of box section and the central head guard support and dividing partition;

Fig. 10. is a fragmentary view of the horsebox trailer of Fig. 9 but from the opposite side and end and also including the front roof part and grille-like central head guard;

Fig. 11 is a partly schematic exploded perspective view from above of an alternative embodiment and illustrating a one piece integrally formed roof member of GRP with a metal support frame beneath, which is normally bonded therewith, but illustrated spaced below;

Fig. 12. is a perspective view from below of the roof member of Fig. 11 without support frame; and

Fig. 13. is a fragmentary perspective view from above of the trailer body of Figs. 1 to 9 but such as to receive the roof member of Figs. 11 and 12 and wherein for the purpose of illustration, the I-shaped support frame is shown separated from the moulded roof member and positioned with its mounting sockets located on the top of the middle and rear pairs of support posts.

In Figs. 1 to 9 a first embodiment of the invention is illustrated and comprises a horse box trailer 1 comprising a wheeled chassis 2 having two wheels 3 on each side and a jockey wheel 4 at the front end mounted in known manner and a towing hitch 5 for connection to a towing vehicle (not shown). Six spaced apart vertically extending support posts 6, 7, 8, 9, 10 and 11 are provided connected directly to the chassis (possibly via an intermediate structural member) and form main structural support components of the trailer for supporting the side walls 12 to 20 and roof 21. The support posts 6 to 11 are of closed box section and extend vertically and are open at

the top ends. The front pairs of posts 5, 7 and 9, 10 defining access opening are equally spaced so as to be able to optionally receive the front unloading ramp in the off-side or rear-side position. Also the side wall posts are equally spaced i.e. the spacing between the posts 7 and 8 and posts 9 and 10 is the same.

Between the two rear-most support posts 8, 11, a pivotable rear loading/unloading support ramp 22 is pivotally mounted on the frame – see in closed position of Fig. 4, and two upper part 23A, 23B doors are pivotally mounted on hinges 24 on the support posts 8, 11 and shown in the closed position in Fig. 4. A front near side access door 25 is mounted in the wall part 18 between two support posts 6, 7 at the front of the trailer 1 for access and inspection. On the off-side side, an unloading ramp 26 is pivotally mounted on the chassis 2 between the adjacent two fronts of support posts 9, 10. An upper door with window as mounted above the ramp on support post 10 by hinge 28. Front wall panel 16 is located between the two front support posts 6, 9 and has the provision for an optional window 16A, provided by punch-out portion in the plastics moulding part. Above the front door 25 in a portion 17 of a wall panel 17, 18 there is a ventilation/window panel 28 therein with a rail cross member 29 supporting the wall portion 17 beneath it. Reference numerals 17 and 18 actually indicate a single wall panel and a cosmetic strip 29 of aluminium is provided for appearances. A special sliding bolt or catch 30 is provided on at least door 27 to hold closed, as shown, or open against wall 15. On each of the main side wall portions 12, 13 and 14, 15 a horizontal cross frame member 31 and 32 extends between the rear and forward support posts 8, 7 and 10, 11 and lower wall panels 12, 14 are mounted beneath and connected thereto and to the support posts 7, 8 and 10, 11 and floor of the trailer 1. Above the cross pieces 31, 32 are the wall panels 13, 15 extending to the upper region or the upper ends of the support posts 7, 8 and 10,11 on each side. The frame and chassis 2 is constructed and the adjacent support posts equally spaced so that the front access door 25 and

panel 18 may instead optionally be located on the opposite off-side and the ramp 26 on the near side, if desired, during assembly and construction.

Mudguards 33 are provided on each side are substantially identical although reversed in disposition and comprise a main twin arched portion which are each symmetrical about a transverse line and each has a front light 33A and/or rear light/reflector 33B mountable at the front and a rear light and/or reflector mountable on the rear such that the main mudguard portion is rotatable through 180° and locatable on the opposite side thus only one main mudguard portion 33 is required to be manufactured which is utilizable on either the near side or off-side and with light/reflector connection means for the appropriate optional light/reflector connection therewith.

The main roof portion 34 of the trailer is illustrated on its arm in Figs. 7 and 8 and is formed of Sheet Moulding Compounds (SMC) using compression moulding in known manner wherein the fibre reinforced composite material is provided in a compression mould and subject to high pressure and temperature to form the desired shape in one piece in a manner different to injection moulding or GRP formation and in a manner which is well-known. Because of the current limitations in the size of the press machinery for SMC compression moulding, the roof is formed in two parts of SMC – namely the front tapering portion 35 of the roof (with skylight 35C) is formed separately from the main rear part . A lap joint 36, 35B forms is provided between the main roof portion 34 and the front roof portion 35 with projections on 35B engaging in corresponding recess in 36 and being sealed by mastic or other adhesive means (not shown).

The main roof member or portion 34 and front roof portion 35 and illustrated in greater detail in Figs. 7, 7A and 8, 8A and the main roof member 34 comprises a main portion having central, longitudinally extending elongate rib 37 dividing the roof member into two halves with parallel horizontally extending strengthening ridges 34A extending on either side of rib 37 and

towards the edge of the roof member where a further reinforcing ridge or rounded shoulder portion 38 is provided on each side which curves over into a recessed capping portion 38A and the recessed capping portion 38A fits over the top edge of the upper panels 13, 15 and may be secured thereto by a suitable adhesive means or sealing means. A rear reinforcing ridge 34B with flange is provided to close the rear above the rear door flap 23A, 23B.

The normally aluminium or other metal sheet side walls 13 and 15 extend substantially to the top of the support posts 8, 8 and 10, 11 on each side and preferably extend vertically to provide optimum interior space and ease of hinging rear door flaps 23A, 23B. Furthermore, the rear support posts 8, 11 extend vertically as do the other support posts which will facilitate hinging of the front and back doors 27 and 23A, 23B. As will be apparent from Fig. 8 which leave moulded with the main roof member are four sockets two rear sockets 39 and two front sockets 40 of substantially rectangular outline when viewed in plan from below from below and these securing sockets 39, 40 closely fit over the top ends of the support posts 7, 8 and 10, 11 with little clearance and may be secured thereto by adhesive and other bonding means (not shown). (Alternatively, the posts 39, 40 may function as sockets, with projection extending from the roof member and insertable in the open ends of support posts 7, 8 and 10, 11). In this manner, a rigid and secure and weatherproof structure is provided which is readily sealable and strong and of attractive appearance.

In Fig. 8 the channel side portions 38A are readily seen running along each side and which fit over the top of the side walls 13, 15. Similarly channel side portions 35A of front part 35 fits over the adjacent side walls. At the front end of the roof member 34 there is a generally V-shaped sectioned channel portion 36 which extends across the fronts of rib 37 shoulders 38 and forms part of a lap joint in known manner which cooperate with an appropriately shaped rear portion 35B at the rear edge of the front part 35 as shown in Fig. 8A. (From Fig. 13, it will be apparent that the side walls 13, 15 extend to the

top of the support posts). The front roof portion 35 is mounted on support rails 35D extending between tops of the two pairs of front support posts 6, 7 and 9, 10 on either side (only one shown) and similarly has lower channel portion for fitting thereon and rail 35D in turn overlaps the side wall 17 and sealed by sealant or adhesive.

In the embodiment of Fig. 9 there is only one support rail 35D above the ramp door (not shown) i.e. there is not such a rail on both sides. On the inspection door 25 side, the roof portion 35 rests directly on top of panel portion 17.

A central support post 41 with roof engaging top crosspiece 42 is mounted on the floor of the interior of the trailer 1 and the horizontal crosspiece 42 atop thereof is connected to the roof. Two partition panels 43, 44 are pivotally mounted on post 41 extending forward or rearwardly and located at such position. A headguard in the form of a grill 45 is removably or pivotally mountable thereabove in the front region and detachably connected to lower partition by a special connection device.

An alternative embodiment of a roof member 46 is illustrated in Figs. 11 to 13. Fig. 11 is an exploded view of the roof member 46 and an I-shaped in plan, steel support frame 47 is schematically illustrated. The whole roof member 46 including a front tapered portion is made in one piece out of GRP with a front skylight aperture 48 and rounded peripheral shoulders 49 extend around all sides except the transverse rear end. Side flange or skirt 50 of the roof lap the side panels or side walls 13, 15, 17 on the outer sides To make a sealed joint, a 50mm wide member (not shown) bridges the inside faces to make a bonded double lap joint, (two lap joints side by side). The roof member 46 has elongate longitudinal now transverse reinforce ribs 46A. A metal support frame 47 is generally of I-shaped section in plan and is provided as support and has four metal sockets 51 extending downwardly from the ends of the crosspieces 47A and downwardly locatable over the

tops of the four rear support posts 7, 8 and 10, 11 as illustrated in Fig. 13. The support frame 47 will, however, be fixed to the inside of the roof member 46 by adhesive bonding so as to be one piece with the roof member 46 (Alternatively, projections instead of sockets 51 may be provided to be locatable in the ends of posts 7, 8, 10, 11).

In all the embodiments and generally, preferably each socket/projection has a similar cross section and is preferably close-fitting with or in the adjacent projection/socket and preferably such as to accommodate an adhesive/bonding agent between the juxtaposed faces to secure such. The chassis is preferably symmetrical and two front/forward posts on each side are equally spaced to permit optional ramp/door mounting on either side although the posts either side of the front ramp differ to the posts either side of the inspection door as they are shaped differently to take either a door closure seal for the ramp or a simple flange to bolt a ply panel to on the side without a ramp. Also, the roof preferably has rounded shoulder portions along each opposite lateral side which each terminate in a downwardly and vertically or substantially vertically extending portion or edge to join with or run into the outer surface of the side walls of or other support of the horsebox.

CLAIMS

1. A horse box trailer or other trailer including a plurality of spaced apart, upwardly extending support posts, with said support posts having mounted at the top thereof via mounting means, an integrally formed or moulded roof member or a support frame connected to such a moulded roof member, said mounting means each comprising, respectively, a socket portion or part of the roof member or of the support post, and an insertion portion or projecting portion of the support post or of the roof member, with said insertion portion or projecting portion being insertable into said socket portion or part.

2. A trailer as claimed in claim 1, in which the sockets and projections are shaped and sized so as to be close and securely fitting.

3. A trailer as claimed in claim 2, in which spaces exist for a securing bonding agent or adhesive to be provided between the sockets and projections.

4 A towable horse box trailer or other trailer including a wheeled chassis or frame and having at least four spaced apart upwardly extending / structural support posts connected thereto as structural support members with two said support posts at the rear and two said support posts at the front or towards the front of the chassis or frame, and with said four support posts extending upwardly and having mounted at the top thereof an integrally formed or moulded roof member or a support frame for and connected to such a moulded roof member, said support posts being connected to the roof member by means of at least four sockets on the roof member or on the top of the support posts and at least four projecting portions at the upper ends of the posts or on the roof member, respectively, with the sockets receiving the projections.

5 A trailer as claimed in claim 4, in which the projections are the upper ends of the posts or comprise such and the sockets are on the roof member

or support therefore and are each for receiving the upper end of one of the support posts and being secured thereto.

6. A trailer as claimed in claim 4, in which the support posts are of a hollow closed box section.

7 A trailer as claimed in any of claims 1 to 6, in which the roof member is integrally formed over its whole length from front to rear and side to side (such as when formed of glass reinforced plastics (GRP) material) and is formed in two parts.

8. A trailer as claimed in claim 7, when formed in two parts wherein such are connected by a lap joint.

9. A trailer as claimed in any of claims 1 to 8, in which the roof member has a peripheral downwardly extending skirt or connecting wall extending along at least the opposite lateral sides.

10. A trailer as claimed in claim 9, in which the skirt or connecting wall has a channel or recess accessible from below, for connection to or interfitting with or on or over the top of the side walls of the horse box trailer.

11. A trailer as claimed in any of claims 1 to 10, in which the side walls extend to or substantially to the roof level.

12. A trailer as claimed in any of claims 1 to 11, in which the roof or member is formed of a plastics material known as Sheet Moulding Compound (SMC).

13. A trailer as claimed in claim 12, in which the SMC is produced by being subject to known compression moulding wherein a special sheet moulding compound which is a fibre reinforced composite material is located in a shaped form and heated under pressure until the material is cured and to form the desired shape

14. A trailer as claimed in any of claims 1 to 13, in which the roof is formed in two parts with the main rear part being of SMC and the front (and normally a tapering part) being also of SMC.

15. A trailer as claimed in claim 14, in which a suitable joint is provided between the two roof members in known manner which even if such fails, water will not ingress because of the constructional shape.

16. A trailer as claimed in claim 15, in which the joint is a lap joint with adhesive bonding.

17. A trailer as claimed in any of claims 1 to 16, in which the lateral downwardly extending portions of the integrally formed roof members have a recess, channel or double-walled portion accessible from below and which is locatable over the top edges of the side walls or support rails.

18. A trailer as claimed in claim 17, in which the roof members are securable by mastic or other bonding means or provided with sealing means.

19. A trailer as claimed in claim 17, in which the side channels or double-walled portions are provided on both the main and front roof members or portions.

20. A trailer as claimed in any of claims 1 to 19, in which at least the rear member part of the roof has lateral and longitudinally extending side ribs or shoulder portions and a central longitudinal rib provided for strength or reinforcing.

21. A trailer as claimed in claim 20, in which a plurality of transverse parallel ribs are also provided in the regions between the lateral ribs or shoulders and the central rib.

22. A trailer as claimed in any of claims 1 to 11 or 15 to 21, in which when the roof member is formed of GRP, the support sockets are provided by a

support frame (preferably of galvanized steel) of very generally I-shape in plan view with the free end of the cross-piece carrying sockets or recesses open on the lower sides or the frame comprises an elongate central portion having transverse end cross-pieces extending across the opposite ends

23. A trailer as claimed in claim 22, in which at the ends of the cross-piece there are downwardly extending socket or recessed parts for location over the ends of the upright support posts.

24. A trailer as claimed in claim 22, in which projecting portions are provided on the frame and extend into the ends of the posts.

25. A trailer as claimed in claim 23 or 24, in which where an SMC member is provided, projections in place of sockets may be used extending downwardly and engaging in the tops of the support posts

26. A trailer as claimed in any of claims 22 to 24, in which the support frame member is located on the underside of the GRP or otherwise moulded roof member.

27. A trailer as claimed in claim 26, in which the support frame is located within the confines of a downwardly extending peripheral skirt or rim and is secured to the roof member.

28. A trailer as claimed in claim 27, in which the roof member is secured by adhesive or other bonding means.

29. A trailer as claimed in any of claims 1 to 27, in which at least four sockets or projections are provided.

30. A trailer as claimed in any of claims 1 to 28, in which six upwardly extending support posts are provided with the foremost front pair being spaced apart on opposite sides of the chassis frame which is normally

tapered towards the towing hitch and the front posts support the narrower front roof member or portion of the horse box trailer.

31. A trailer as claimed in claim 29, in which the support posts on either sides which define the space for forward access will be equally spaced to enable mounting of the ramp and access door on the offside or nearside and vice versa.

32. A trailer as claimed in any of claims 1 to 30, in which mudguards are provided connectable to the horse box trailer or other trailer and each is formed in three parts with a front light portion and a rear light portion connectable to a main central mudguard part which is symmetrical and thus locatable on the near side or reversible to be locatable on the offside of the trailer, with the front and rear light portions being connectable to each in both positions.

33. A trailer as claimed in any of claims 1 to 31, in which, when the trailer is a horse box trailer, the chassis member normally tapers or reduces in width towards the front, and has side members and is symmetrical and has connection means on angled frame members such as to enable the front access door and front loading/unloading ramp to be locatable on the rear-side or on the off-side.

34. A trailer substantially as herein described with reference to the accompanying drawings.

Application No: GB0803523.0 **Examiner:** Mr Sean O'Connor

Claims searched: 1-34 **Date of search:** 23 March 2009

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X,Y	X:1-6, 9-13, 17, 18, 29 Y:31, 33	US2963313 A (BENNET) See all figures and description regarding figures 7 and 8.
X,Y	X:1-6, 9, 11, 12, 29, 30 Y:31-33	NL1028746 C2 (HOTRA AANHANGWAGENS) See abstract and figures.
X	X:1-6, 9-12, 17, 18, 29	DE202007012185 U1 (ALCAN TECH) See abstract and figures.
Y	31-33	US4530538 A (GREENE) See abstract and figures.
A	-	NL1031146 C1 (BOYRIVEN) See abstract.
A	-	US4425001 A (MAURI) See figures.
A	-	US2007/281523 A1 (RILEY) See figures

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category	P	Document published on or after the declared priority date but before the filing date of this invention
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X}:

Worldwide search of patent documents classified in the following areas of the IPC

B60P; B62D

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

International Classification:

Subclass	Subgroup	Valid From
B60P	0003/04	01/01/2006